

Remarks

Status of the Claims

Claims 1-55 were pending in the application. In the Office Action mailed August 8, 2006, claims 1-16, 37-52, 54, and 55 were rejected. Claims 17-36 and 53 remain withdrawn from consideration as being directed to a non-elected species. By this paper, claims 1, 37, and 52 have been amended merely to clarify the arguments presented herein, which Applicant believes to be fully supported by the previous claim language. For the reasons set forth below, Applicant submits that each of the pending claims is patentably distinct from the cited prior art and in condition for allowance. Reconsideration of the claims in view of the amendments and following remarks is therefore respectfully requested.

Claim Rejections

Claims 1-16, 37-52, 54, and 55 were rejected under 35 U.S.C. 103(a) as being unpatentable over Alexander et al. ("Alexander") in view of Wang. This rejection is respectfully traversed. As set forth below, Applicant respectfully submits that each of the pending claims, as amended, is patentably distinct from the cited references, individually and collectively.

Claims 1, 37, and 52

Independent claims 1, 37, and 52 have been amended to recite that a PIO comprises:

a single data structure within the memory that encapsulates
attribute data for one or more attributes providing information about
a single television program and

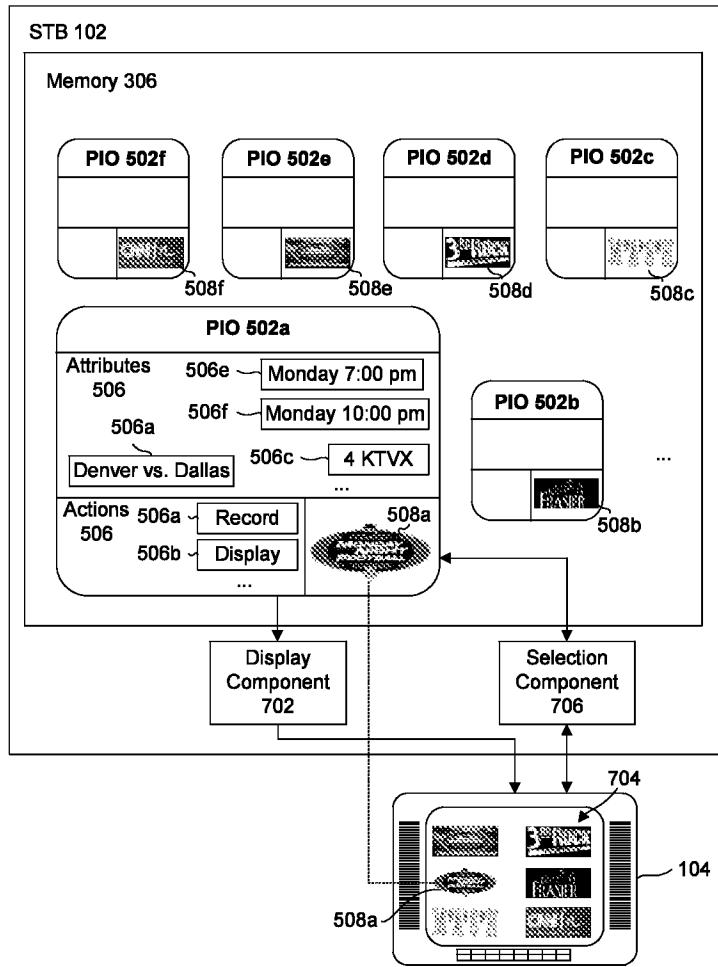
program code for one or more user-selectable actions executable
by the entertainment system in connection with the same television
program, at least one attribute comprising a link to supplemental
information related to the television program.

Support for these amendments may be found in FIG. 5 and the accompanying text.

Thus, a PIO, as claimed, is a very specific data structure within a memory of an entertainment system for representing a single television program. The claimed PIO not only stores attribute data for providing information about the television program (e.g., title, description, rating, running time), but also includes actions comprising program code, which is executable by the entertainment system in connection with the same television program (e.g., program code for causing the entertainment system to record the program). Furthermore, the claimed actions and attributes are “encapsulated” within a single data structure, meaning that they are “encase[d] in or as if in a capsule” or that the PIO “form[s] a capsule or sheath around” the actions or attributes. See www.dictionary.com.

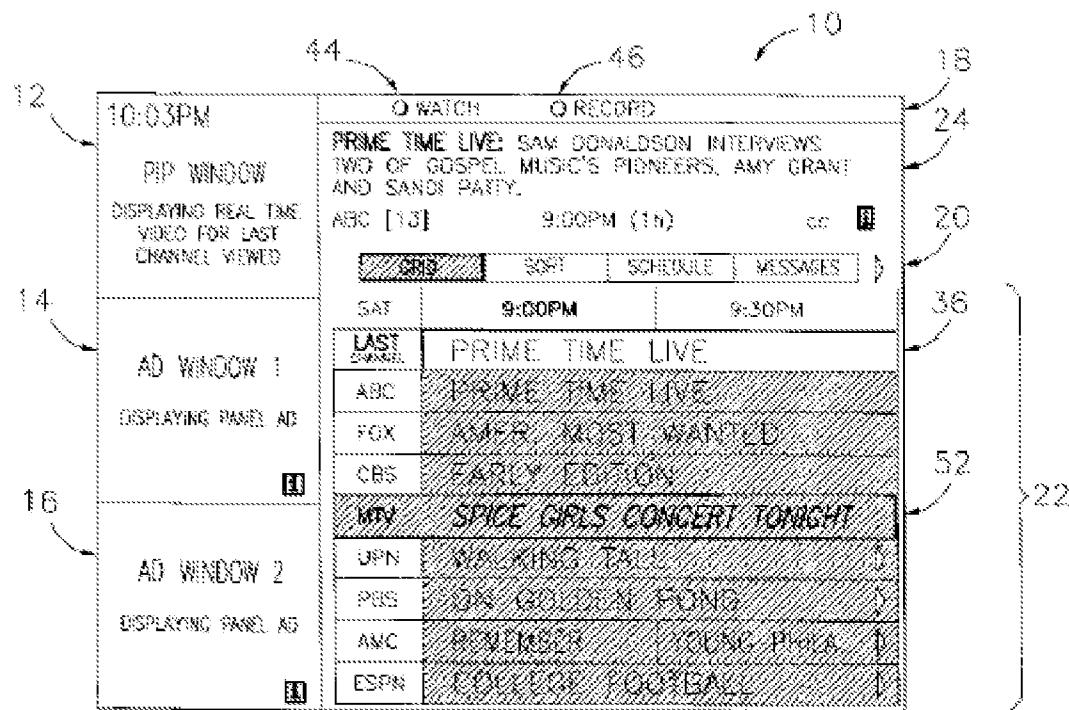
As illustrated below in Figure 7 of the present application, each PIO is a separate data structure including the necessary attribute data and program code for interacting with the corresponding single television program. For instance, the PIO 502a includes a number of attributes, such as the name of the program (“Dallas v. Denver”), the starting time (“Monday, 7:00 p.m.”), etc. In addition, the PIO 502a includes a number of actions (“Record”), which are represented within the PIO 502a as program code for carrying out the actions. Thus, the actions are not merely icons or names displayed in a graphical

user interface. Each set of attribute data and program code for a given television program is encapsulated within a single PIO data structure (object), making it easier to transmit, copy, or otherwise manipulate the data as a unit.



The Office Action cites to Alexander for the claimed PIO. However, a closer look at Alexander reveals that the reference does not disclose anything remotely similar to a PIO, as claimed. The Office Action is apparently equating a PIO with Alexander's program guide display screen, *i.e.*, "program guide display screen (read on PIO)."
Office Action at page 4 (emphasis added).

As illustrated below, Alexander's program guide display screen (FIG. 1) is a standard electronic program guide (EPG) showing the television programs available on many different channels over a number of time slots.



Alexander's program guide display screen does not qualify as a PIO for several reasons:

1. Alexander's program guide display screen is not a data structure, much less a single data structure, in the memory of an entertainment system;
2. Alexander's program guide display screen does not relate to a single television program; and
3. Alexander's program guide display screen does not contain or encapsulate attribute data and program code related to a single television program.

1. Alexander's program guide display is not a data structure, much less a single data structure, in the memory of an entertainment system.

A data structure is scheme or format for organizing related pieces of information within a computer memory. Examples of common data structures include files, lists (including linked lists), arrays, records, trees, tables, etc. See www.webopedia.com.

Alexander's program guide display screen shown in FIG. 1 is not a data structure. What is shown in Alexander's FIG. 1 is not related in any way to how the underlying data and program code is organized. For example, the names of various television programs are likely stored in a number of database tables. Icons are likely stored in a different set of tables, or in a linked list structure in memory. Any number of configurations of data structures could result in the screen display of FIG. 1, but Alexander is completely silent about which data structures are employed. The only statement about Alexander's FIG. 1 that is probably safe is that it does not represent a single data structure in memory, as claimed.

2. Alexander's program guide display screen does not relate to a single television program.

Even if Alexander's program guide display screen was a data structure, it clearly relates to more than a single television program (e.g., Prime Time Live, America's Most Wanted, Early Edition, Spice Girls Concert, Walking Tall, On Golden Pond, and College Football).

Applicant pointed out the disadvantages of conventional electronic program guides, like Alexander, that provide too much information:

While EPGs have numerous advantages over conventional printed guides (such as TV Guide[®]), EPGs are still based on the channel/time slot model,

which is of diminishing importance today. For example, where a viewer has access to over 500 channels, he or she is not interested in the fact that the latest episode of Friends® is being shown on Channel 498. Rather, the viewer would simply like to know when the program is being broadcast and allow the entertainment system to automatically switch to the appropriate channel.

With the advent of digital video recorders (DVRs), even the concept of broadcast time is becoming irrelevant. Ideally, a viewer would like to instruct the entertainment system to record the next episode of Friends®, which the viewer can then watch at a convenient time.

Forcing a viewer to search through a grid consisting, for example, of over 500 rows (corresponding to channels) and possibly thousands of columns (corresponding to time slots) is no longer acceptable. Given the wide variety of entertainment options and the limited amount of time available to individuals for entertainment, any advancement increasing the convenience of an entertainment system would be highly advantageous.

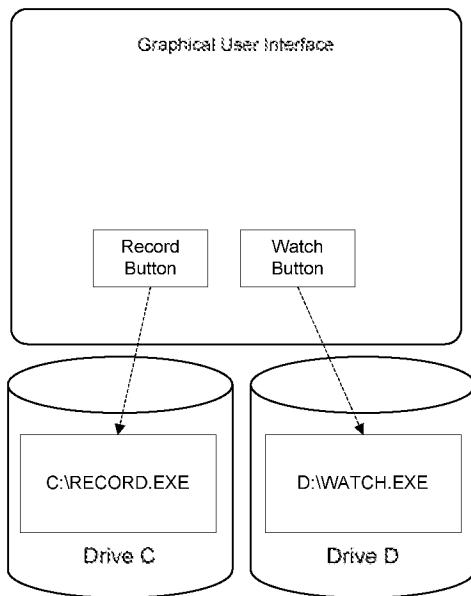
Application at pages 1-2 (emphasis added). If Alexander's FIG. 1 was a data structure (which it is not), it would directly teach against the claimed limitations of storing the attribute data and program code for a single television program within a PIO. As described above, Alexander falls squarely into the type of EPG that Applicant was trying to avoid with the present application.

3. Alexander's program guide display screen does not contain or encapsulate attribute data and program code related to a single television program.

Ultimately, what is displayed in Alexander's FIG. 1 is a rasterized image of a frame buffer within a graphics card. The frame buffer does not actually contain the data for the names and descriptions of television programs; nor does the frame buffer store program code. These are stored elsewhere (likely in multiple different locations). As noted above, Alexander provides no insight into the underlying data structures that are used to display his program guide.

With regard to the “program code” limitation, the Office Action states that “[i]nherently, the user-selectable actions (i.e., record icon, watch icon, detail icon, program icon, etc.) must comprise program code executable by the entertainment system in connection with the television program that when the icon is selected, the content associated with the selected icon is provided.” Office Action at page 3.

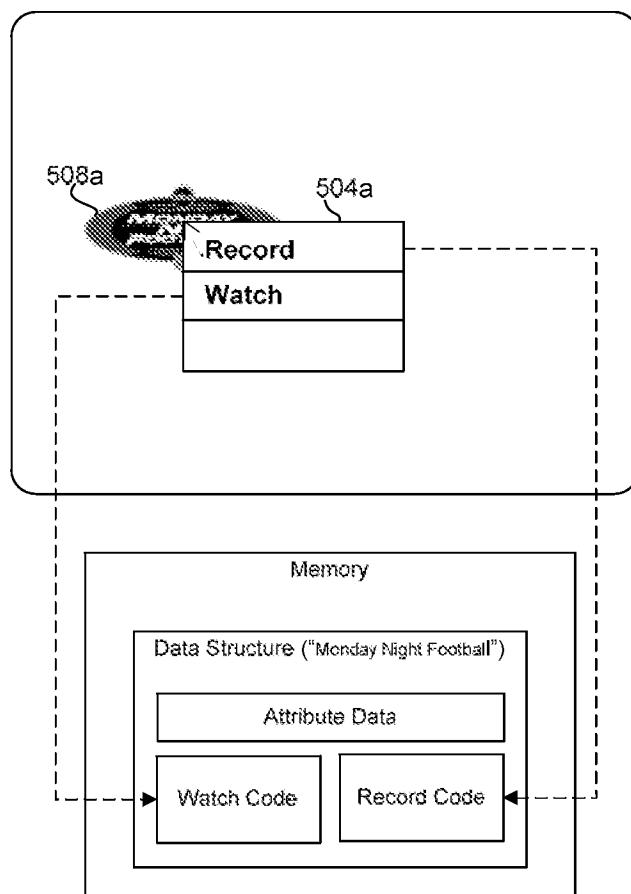
While it is inherent that program code must exist to perform the actions associated with Alexander’s icons, it is not inherent that the program code must be encapsulated within the same data structure with the attribute data. Furthermore, it is not inherent that each PIO encapsulates the attribute data and program code for a single program. Consider the following graphical user interface with two buttons (“Record” and “Watch”).



The program code executed when the “Record” button is activated is stored on Drive C in the executable file “C:\RECORD.EXE,” while the program code executed when the “Watch” button is pressed is stored on Drive D in the executable file “D:\WATCH.EXE.” Thus, the existence of the code corresponding to the “Record” and “Watch” buttons is

inherent. However, the location and/or data structures used to store the respective code is not. Indeed, the code could be stored in separate file hierarchies within different hard drives, as illustrated.

By contrast, as illustrated below in an embodiment of the claimed invention, program code for the “Watch” and “Record” functions is encapsulated within the same data structure in memory.



As depicted, a PIO for “Monday Night Football” is a data structure in memory that includes attribute data for “Monday Night Football,” as well as program code for implementing the “Record” function and program code for implementing the “Watch”

function. None of the prior art references teach or suggest this specific type of data structure.

Claims 54 and 55

Claims 54 and 55 recite that:

the program code is in a ***machine-independent format*** that is executable in a ***virtual machine*** within the entertainment device and ***any destination device to which the PIO is sent***, such that the ***program code does not need to be installed on the destination device*** prior to receiving the PIO in order to perform an associated user-selected action.

Support for these limitations may be found, for example, in pages 18-20 of the present application.

These claimed features allow a destination device to which a PIO is sent (e.g., another set-top box) to execute the one or more actions associated with the PIO without requiring the program code to be pre-installed on the destination device. Furthermore, providing the program code in a machine-independent format allows PIOS to be shared between a variety of different devices, such as cellular phones, personal computers, and set-top boxes (STBs).

As an example, a user may transmit a PIO representing a television program from an STB to her cellular telephone. The PIO may include an action for displaying one or more of the attributes of the PIO, e.g., the starting time of the television program. The cell phone does not need to have software installed for examining the PIO and outputting the requested information. Instead, the action, as represented by machine-independent code within the PIO, may be executable by a virtual machine within the

cellular telephone to output the attribute information, either on the telephone's display screen or to the user's personal information manager (PIM).

The cited references do not disclose, individually or collectively, a PIO comprising program code "in a machine-independent format that is executable in a virtual machine within the entertainment device and any destination device to which the PIO is sent."

With regard to claim 54, the Office Action cites to Wang for "a program guide written in HTML" and makes the conclusory statement that "it is obvious to one of ordinary skill in the art that the program code (i.e., code of program in HTML format) is in a machine independent format that is executable in a virtual machine within the entertainment device and any destination device to which the PIO is sent, such that the program code (in HTML code) does not need to be installed on the destination device prior to receiving the PIO."

Applicant respectfully submits that the Office Action has completely changed the meaning of "program code" between claim 1 and claim 54. In the context of claim 1, the Office Action states that program code must be inherently provided to implement, for example, the "record" and "watch" actions. This is referring to program code for executing user-selected actions. However, in the context of claim 54, the Office Action is referring to the HTML code used to display a program guide. This is not the type of code used to perform a user-selectable action in connection with the television program, as claimed.

None of the cited references disclose (or even hint at) the use of a virtual machine within the entertainment system to execute machine-independent code to

perform user-selectable actions. Wang does not disclose, for instance, javascript or other machine-independent code for recording a television program.

Furthermore, Alexander/Wang does not satisfy the limitation of “the program code does not need to be installed on the destination device prior to receiving the PIO in order to perform an associated user-selected action.” If Wang’s HTML-encoded program guide is sent to an entertainment system that does not already have code installed to record a television program, the destination system will still not have the required code upon receipt of the program guide. Wang simply does not disclose sending an object, such as a PIO, that encapsulates program code (methods) for carrying out the user-selectable actions on the destination system.

Conclusion

For at least the foregoing reasons, the cited prior art references, whether considered individually or in combination, fail to disclose each of the limitations in any of the pending independent claims. For at least the same reasons, each of the claims depending therefrom are also patentably distinct from the cited prior art. A Notice of Allowance is respectfully requested. The Examiner is encouraged to contact the undersigned at the telephone number provided below for a quick resolution of any remaining issues.

Respectfully submitted,

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